variable components; a statement whether the model will operate at test conditions without manufacturer programming; any additional testing instructions if applicable; if a variety of motors/drive kits are offered for sale as options in the basic model to account for varying installation requirements, the model number and specifications of the motor (to include efficiency, horsepower, open/closed, and number of poles) and the drive kit, including settings, associated with that specific motor that were used to determine the certified rating; and which, if any, special features were included in rating the basic model.

(xi) Single package vertical air conditioners: Any additional testing instructions, if applicable; if a variety of motors/drive kits are offered for sale as options in the basic model to account for varying installation requirements, the model number and specifications of the motor (to include efficiency, horsepower, open/closed, and number of poles) and the drive kit, including settings, associated with that specific motor that were used to determine the certified rating; and which, if any, special features were included in rating the basic model.

(xii) Single package vertical heat pumps: Any additional testing instructions, if applicable; if a variety of motors/drive kits are offered for sale as options in the basic model to account for varying installation requirements, the model number and specifications of the motor (to include efficiency, horsepower, open/closed, and number of poles) and the drive kit, including settings, associated with that specific motor that were used to determine the certified rating; and which, if any, special features were included in rating the basic model.

(xiii) Computer room air-conditioners: Any additional testing instructions, if applicable; and which, if any, special features were included in rating the basic model.

(xiv) Package terminal air conditioners and package terminal heat pumps: Any additional testing instructions, if applicable.

(c) Alternative methods for determining efficiency or energy use for commercial HVAC equipment can be found in § 429.70 of this subpart.

[76 FR 12451, Mar. 7, 2011; 76 FR 24775, May 2, 2011, as amended at 78 FR 79594, Dec. 31, 2013; 79 FR 25501, May 5, 2014]

§ 429.44 Commercial water heating equipment.

(a) *Determination of represented value.* Manufacturers must determine the represented value, which includes the certified rating, for each basic model of commercial water heating equipment, either by testing, in conjunction with the applicable sampling provisions, or by applying an AEDM.

(1) *Units to be tested.* (i) If the represented value for a given basic model is determined through testing, the general requirements of § 429.11 are applicable; and

(ii) For each basic model selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of energy consumption or other measure of energy use of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(*2*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429). And,

(B) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the i^{th} sample; or,

(*2*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429).

(2) *Alternative efficiency determination methods.* In lieu of testing, a represented value of efficiency or consumption for a basic model of commercial water heating equipment must be determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of energy consumption or other measure of energy use of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM and less than or equal to the Federal standard for that basic model; and

(ii) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM and greater than or equal to the Federal standard for that basic model.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to commercial WH equipment; and

(2) Pursuant to § 429.12(b)(13), a certification report must include the following public equipment-specific information:

(i) Commercial electric storage water heaters: The maximum standby loss in percent per hour (%/hr) and the measured storage volume in gallons (gal).

(ii) Commercial gas-fired and oil-fired storage water heaters: The thermal efficiency in percent (%), the maximum standby loss in British thermal units per hour (Btu/h), the rated storage volume in gallons (gal), and the nameplate input rate in British thermal units per hour (Btu/h).

(iii) Commercial water heaters and hot water supply boilers with storage capacity greater than 140 gallons: The thermal efficiency in percent (%), whether the storage volume is greater than 140 gallons (Yes/No); whether the

tank surface area is insulated with at least R–12.5 (Yes/No); whether a standing pilot light is used (Yes/No); for gas or oil-fired water heaters, whether the basic model has a fire damper or fan assisted combustion (Yes/No); and, if applicable, pursuant to 10 CFR 431.110, the maximum standby loss in British thermal units per hour (Btu/h) and measured storage volume in gallons (gal).

(iv) Commercial gas-fired and oil-fired instantaneous water heaters greater than or equal to 10 gallons and gas-fired and oil-fired hot water supply boilers greater than or equal to 10 gallons: The thermal efficiency in percent (%), the maximum standby loss in British thermal units per hour (Btu/h), the rated storage volume in gallons (gal), and the nameplate input rate in Btu/h.

(v) Commercial gas-fired and oil-fired instantaneous water heaters less than 10 gallons and gas-fired and oil-fired hot water supply boilers less than 10 gallons: The thermal efficiency in percent (%) and the rated storage volume in gallons (g).

(vi) Commercial unfired hot water storage tanks: The thermal insulation (i.e., R-value) and stored volume in gallons (gal).

(3) Pursuant to §429.12(b)(13), a certification report must include the following additional, equipment-specific information:

(i) Whether the basic model is engineered-to-order; and

(ii) For any basic model rated with an AEDM, whether the manufacturer elects the witness test option for verification testing. (See §429.70(c)(5)(iii) for options). However, the manufacturer may not select more than 10% of AEDM-rated basic models to be eligible for witness testing.

(4) Pursuant to §429.12(b)(13), a certification report may include supplemental testing instructions in PDF format. A manufacturer may also include with a certification report other supplementary items in PDF format (e.g., manuals) for DOE consideration in performing testing under subpart C of this part.

(c) Alternative methods for determining efficiency or energy use for commercial WH equipment can be found in §429.70 of this subpart.

[76 FR 12451, Mar. 7, 2011; 76 FR 24776, May 2, 2011, as amended at 78 FR 79594, Dec. 31, 2013; 79 FR 25504, May 5, 2014]

EFFECTIVE DATE NOTE: At 79 FR 40565, July 11, 2014, §429.44 was amended by redesignating paragraphs (a), (b), and (c) as (b), (c), and (d), respectively; adding new paragraph (a); and revising newly redesignated paragraph (b), effective July 13, 2015. For the convenience of the user, the added and revised text is set forth as follows:

§ 429.44 Commercial water heating equipment.

(a) For residential-duty commercial water heaters, all represented values must be determined in accordance with §429.17.

(b) *Determination of Represented Value for All Types of Commercial Water Heaters Except Residential-Duty Commercial Water Heaters.* Manufacturers must determine the represented value, which includes the certified rating, for each basic model of commercial water heating equipment except residential-duty commercial water heaters, either by testing, in conjunction with the applicable sampling provisions, or by applying an AEDM as set forth in §429.70.

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§ 429.45 Automatic commercial ice makers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to automatic commercial ice makers; and

(2) For each basic model of automatic commercial ice maker selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of maximum energy use or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where: